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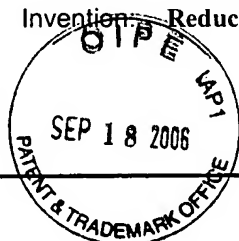
TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.  
ITL1026US

In Re Application Of: Robert P. Meagley, et al.

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/688,521	October 17, 2003	Amanda C. Walke	21906	1752	2105

Invention: Reducing Photoresist Line Edge Roughness Using Chemically-Assisted Reflow



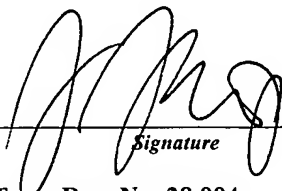
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Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on  
August 28, 2006

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Dated: September 13, 2006

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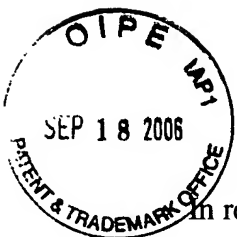
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant:

Robert P. Meagley, et al.

Serial No.: 10/688,521

Filed: October 17, 2003

For: Reducing Photoresist Line Edge  
Roughness Using Chemically-Assisted  
Reflow

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Art Unit: 1752

Examiner: Amanda C. Walke

Atty Docket: ITL.1026US  
(P16713)

Assignee: Intel Corporation

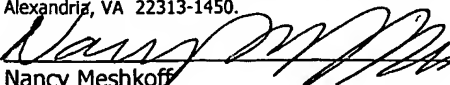
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**APPEAL BRIEF**

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**REAL PARTY IN INTEREST**

The real party in interest is the assignee Intel Corporation.

**RELATED APPEALS AND INTERFERENCES**

None.

## **STATUS OF CLAIMS**

Claim 1 (Rejected).

Claim 2 (Canceled).

Claim 3 (Rejected).

Claims 4-5 (Canceled).

Claims 6-12 (Rejected).

Claims 13-27 (Canceled).

Claims 1, 3, and 6-12 are rejected and are the subject of this Appeal Brief.

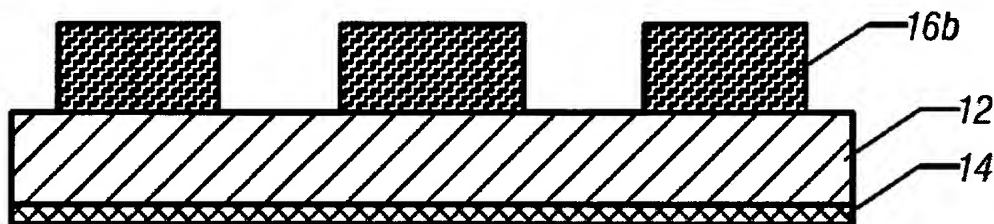
## **STATUS OF AMENDMENTS**

All amendments have been entered.

## **SUMMARY OF CLAIMED SUBJECT MATTER**

In the following discussion, the independent claims are read on one of many possible embodiments without limiting the claims:

1. A method comprising:  
developing a patterned photoresist (Figure 1, specification at page 3, lines 1-2);  
absorbing a plasticizer in a supercritical fluid into the surface of said patterned photoresist after developing the photoresist (Figure 2, specification at page 3, lines 23-26 and page 5, lines 12-15); and  
reflowing the photoresist after absorbing the plasticizer (Figure 4, specification at page 4, lines 18-19).



**FIG. 4**

At this point, no issue has been raised that would suggest that the words in the claims have any meaning other than their ordinary meanings. Nothing in this section should be taken as an indication that any claim term has a meaning other than its ordinary meaning.



**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

- A. Are claims 1, 3, and 6-12 unpatentable under 35 U.S.C. § 103(a) over Hallock (U.S. Patent No. 6,582,891) in view of Verhaverbeke (U.S. Patent Publication No. 2004/0198066)?

## ARGUMENT

**A. Are claims 1, 3, and 6-12 unpatentable under 35 U.S.C. § 103(a) over Hallock (U.S. Patent No. 6,582,891) in view of Verhaverbeke (U.S. Patent Publication No. 2004/0198066)?**

The office action fails to make out a *prima facie* rejection since there is a total absence of any teaching of a rationale to combine. The total analysis is as follows:

Given the teachings of the references, it would have been obvious to one of ordinary skill in the art to prepare the material of Hallock et al. choosing to drive the patterned/substrate post development over Verhaverbeke with reasonable expectation of achieving a pattern having reduced line edge roughness.

Of course, the requirement to show a rationale to combine demands that the *prima facie* rejection explain why it would be obvious to combine and explain why based on some teaching from the reference. There simply is no reason to combine Verhaverbeke with Hallock. Verhaverbeke has nothing to do with a photoresist. Moreover, Verhaverbeke dries off the material that he treats via his treatment process. One would never expect, if all he did was dry, that Verhaverbeke would have some affect on line edge roughness, conclusory assertions to the contrary in the office action notwithstanding.

Thus, there is simply no reason to combine the two references together. Verhaverbeke has nothing to do with photoresists and could not possibly teach anyone anything about line edge roughness. Since his aim is to dry out the material he is treating, it is hard to see how one would think that his process could have any subsequent effect on line edge roughness.

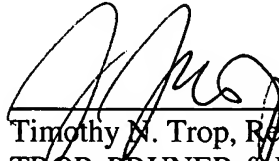
Since it is conceded that Hallock fails to teach the use of the supercritical fluid after development, and there is no rationale to modify Hallock with Verhaverbeke in the way claimed, a *prima facie* rejection is not made out.

Therefore, the rejection should be reversed.

Applicant respectfully requests that each of the final rejections be reversed and that the claims subject to this Appeal be allowed to issue.

Respectfully submitted,

Date: September 13, 2006



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## **CLAIMS APPENDIX**

The claims on appeal are:

1. A method comprising:  
developing a patterned photoresist;  
absorbing a plasticizer in a supercritical fluid into the surface of said patterned photoresist after developing the photoresist; and  
reflowing the photoresist after absorbing the plasticizer.
3. The method of claim 1 including applying the plasticizer in a supercritical carbon dioxide fluid.
6. The method of claim 1 including applying the plasticizer with the develop rinse.
7. The method of claim 1 including applying a plasticizer that improves the etch resistance of the photoresist.
8. The method of claim 1 wherein applying a plasticizer includes diffusing a plasticizer into the photoresist.
9. The method of claim 8 including diffusing a plasticizer in a vapor phase into the photoresist.
10. The method of claim 1 including controlling the amount of reflow by volatilizing the plasticizer during reflow.
11. The method of claim 1 including applying the plasticizer in liquid carbon dioxide.
12. The method of claim 1 including controlling the amount of reflow by cooling the photoresist.

## **EVIDENCE APPENDIX**

None.

**RELATED PROCEEDINGS APPENDIX**

None.